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HETROJUNCTION DIODE OF NITROGEN-DOPED ULTRANANOCRYSTALLINE DIAMOND FILMS PREPARED BY COAXIAL ARC PLASMA DEPOSITION

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Abstract: *Nitrogenated ultrananocrystalline diamond/hydrogenated amorphous carbon composite films were prepared in atmospheres of nitrogen and hydrogen mixed gases, by coaxial arc plasma deposition method. Effect of nitrogen incorporated to the films was electrically investigated. The nitrogen-doped films possesses n-type semiconductor, it was confirmed by studying the heterojunction of the film with p-Si. I-V curve of the junction exhibited a high rectifying action in room temperature. The obtained results confirm that the Nitrogen-doped ultrananocrystalline diamond/hydrogenated amorphous carbon composite film is a good candidate material for the electronic device applications.*